PERSONALIZED ASSISTANCE SYSTEM AND METHOD

CROSS REFERENCE TO RELATED APPLICATIONS

This application is related to and claims priority to U.S. Provisional Application No. 60/158,311, entitled "PERSONALIZED DIRECTORY ASSISTANCE SYSTEM AND METHOD," filed October 8, 1999 and to the subsequently filed United States Patent No. 6,404,884, issued on June 11, 2002, and is a continuation of the subsequently filed allowed Utility Patent Application No. 10/158,571, filed on May 29, 2002, the contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

The present invention relates to communications, and more particularly, to a system and method which provides personalized assistance by allowing a user to preprogram a contact database such that the user can quickly reach a live customer service representative who can search the personalized database and connect the user to his or her desired destination or arrange to perform a service or purchase an item.

00424206.2

Society's demand for virtually instantaneous access to information, and the need to quickly contact others is constantly increasing. To meet this demand, personal information manager (PIM) software for various types, of computers, personal digital assistants (PDA) and global communication networks, such as the Internet, have been developed which facilitate access to data. For example, a person may have contact and telephone numbers stored in their PDA or electronic organizer, such that they can quickly determine the phone number of the person they wish to reach. Similarly, they may have a PIM database on their laptop which contains the same information, such that the PIM and PDA databases are harmonized, i.e., synchronized. Recently developed Internet software allows a user to harmonize a PIM contact information database with an Internet web site.

While the contact data may be available to the user, the data may not be readily accessible, or may be voluminous, thereby requiring the user to search through the contact data in order to determine the telephone

number of the person they wish to reach. For example, a user driving in their car who wishes to determine the telephone number of another person must pull to the side of the road, or risk getting into an accident, in order to boot up their PC or interact with their PDA. This arrangement is dangerous and inefficient.

The proliferation of telephone communication technologies, including cellular (mobile) telephone technology, extends the ability of an individual to contact another to virtually any location in any situation. For example, a cellular telephone user delayed by traffic, or in an emergency, can contact others without the need to seek out a pay telephone or other means of communications, provided they know the telephone number of the party whom they wish to contact. The environmental conditions surrounding the individual's use of the telephone, whether cellular or wire-based, does not always lend itself to easy retrieval of telephone numbers and contact information.

For example, an individual may program the contact

00424206.2

data and telephone numbers into their cellular telephone and use the keypad of the cellular telephone to search through the stored database to locate and dial the desired number. This is often difficult when the user is

5   driving an automobile, or is in another situation which demands their entire undivided attention. Even where the individual is not in a situation where their undivided attention is required, the individual may not want to fumble with their PDA or telephone, or boot up their

10   personal computer (PC), to search for and access contact data.

Technologies have also been developed, such as voice activated dialing, which allows a user to initiate a dialing sequence by speaking the name of the individual

15   whom they wish to contact into the telephone dialing unit. Voice activated dialing systems use speech recognition patterning to search through a stored contact database to initiate dialing. These technologies, however, typically require that the individual use a

20   specific telephone, for example, a cellular telephone,

which they have programmed to recognize their voice and have created a database of associated contact names and numbers. In other words, an individual typically cannot employ the use of voice activated dialing if they use a telephone or device which is not equipped to recognize their speech pattern. Network-based voice recognition systems are also cumbersome to use. Their operability is unreliable, and these systems are difficult and cumbersome to configure. In addition, these systems offer limited functionality, typically serving as mere dialing units. Voice activated dialing technology, therefore, limits the flexibility of a user to contact another person or arrange for the performance of personal services.

In sum, existing technologies allow individuals the ability to carry large volumes of information on their person, or access large volumes of information, and to communicate with others from virtually any location. However, these technologies do not allow the individual a quick, safe and efficient way to initiate contact with

00424206.2

another from any location which supports cellular or wire-based telephony.

SUMMARY OF THE INVENTION

The present invention provides a system which allows the user of a telephone, in particular, a mobile telephone, to easily complete a call to a destination, even when they do not know the number, and without the need to recall the contact's telephone number using the keypad of their telephone, and without the need to boot up a personal computer or hand-held computer such as a PDA.

The present invention further provides a plurality of techniques for users to create and update their personal contact list, and provides for the harmonization, i.e., synchronization, of users' databases with a master database. The ability to harmonize databases further simplifies the process of maintaining multiple contact lists, while still allowing the storage of contact data in forms needed by different

technologies.

As one aspect of the invention, a personalized assistance system for a user of a telephone is provided in which the personalized assistance system has a database including a contact list for the user such that the contact list includes at least one contact name and a corresponding contact number. Telephony hardware couples the telephone to the database. A customer service representative terminal is coupled to the database and the telephone hardware in which the customer service representative terminal searches the database in response to a user query to locate a designated contact from the user's contact list and causes the telephony hardware to connect the telephone with the contact number corresponding to the designated contact.

As another aspect of the invention, a system for populating and maintaining a list of personal contact data for a user of the system is provided, in which the system has at least one user terminal. A web server is coupled to the user terminal through a communication

network such that the web server receives personal

contact update data from the user terminal. A first

database is coupled to the web server such that the first

database stores the list of personal contact data. The

5   list of personal contact data stored in the first

database is updated with the personal contact update data

received by the web server.

As still another aspect of the present invention, a

signaling method for a personal assistance system is

10   provided in which a first dial string sent from a

telephone is translated to a second dial string. The

second dial string identifies an originating switch at

least one of the originating service and originating

service provider for the telephone. The second dial

15   string is transmitted to a computer terminal, and a

database is searched to identify a destination contact

number. The database is searched to identify a network

address of the originating switch in which the network

address is identified in accordance with the second dial

20   string. The destination number is sent to the network

address of the originating switch using an out-of-band network.

As still yet another aspect, a method for using a telephone to contact a service for searching a database of contact numbers for a desired contact number and connecting a calling telephone to the desired contact number is provided in which a telephone number associated with the service is called. Data corresponding to the call is routed to a computer terminal, and the database is searched for a contact list corresponding to an identification number of the calling telephone. The contact list is retrieved and searched for the desired contact number. Call completion data is sent to a switch in which the call completion data corresponds to the desired contact number. The call is connected to the desired contact number.

Another aspect of the invention provides a method for populating and maintaining a list of personal contact data for a user of a personalized assistance system in which personal contact update data is received from a

user terminal. A list of personal contact data is stored in a first database. The list of personal contact data stored in the first database is periodically synchronized with the received personal contact update data.

5   According to another aspect of the present invention, a method for using a telephone to contact a service for searching a database for desired information and performing an operation requested by a user is provided in which, a telephone number associated with the

10   service is called. Data corresponding to the call is routed to a computer terminal. The database is searched for a contact list corresponding to an identification number of the calling telephone. The contact list is retrieved from the database. A requested operation is

15   received from the user, and the requested operation is performed.

Other features and advantages of the present invention will become apparent from the following description of the invention which refers to the

20   accompanying drawings.

00424206.2

BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of illustrating the invention, there are shown in the drawings several forms which are presently preferred, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown.

Fig. 1 is a diagram of a personalized directory assistance system of the present invention;

Fig. 2 is a diagram of the telephony elements of the present invention;

Fig. 3 is a flow chart of the call connection process of the present invention;

Fig. 4 is an example of an out-of-band address table;

Fig. 5 is a diagram of the data communication elements of the present invention;

Fig. 6 is a flow chart of the interaction process between a user terminal and a web server;

Fig. 7 is an example of an account information registration screen as presented on a user terminal;

Fig. 8 is an example of a contact summary screen as presented on a user terminal;

Fig. 9 is an example of a contact addition screen as presented on a user terminal;

5   Fig. 10 is an example of a contact summary screen as presented on a user terminal after a user has saved a contact list addition entry;

Fig. 11 is an example of a contact deletion confirmation screen as presented on a user terminal;

10   Fig. 12 is an example of a contact summary screen as presented on a user terminal after a user has requested deletion of a contact list entry; and

Fig. 13 is an example of an existing user's contact summary screen as presented on a user terminal.

15   DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Referring now to the drawings wherein like reference numerals refer to like elements, there is shown in Fig. 1 a personalized directory assistance system of the present invention designated generally as "2". System 2 allows a

user to populate a personalized contact directory (also

referred to herein as a personal contact list) in a

plurality of methods, such that the contact data can be

automatically retrieved and searched by a customer ,

5   service representative and the user connected to the

designated contact.   The user preferably dials an easy to

remember telephone number, such as *4, and is quickly

connected to the customer service representative who can

help the user complete his or her call.   Of course, a

10   ten digit North American Dialing Plan number can also be

used.

System 2 is preferably comprised of one or more

telephones 4 coupled to telephony hardware 6 via cellular

mobile switching center (MSC) 7, one or more destination

15   telephones 8 coupled to cellular MSC 7 via telephony

network 9, one or more user terminals 10 coupled to data

communication hardware 12 via data communication network

14.   Telephony hardware 6 and data communication network

hardware 12 are further coupled to database 16 and

20   customer service representative (CSR) terminal 18.   In

addition, customer service terminal 18 is further coupled

to database 16.

Telephone 4 is preferably a cellular, or other

wireless telephone, but can also be a wire-based

5   telephone or any other device which facilitates voice

communication. Telephony network 9 is preferably a

typical public switched telephone network (PSTN) capable

of transmitting and receiving voice communications.

Telephony hardware 6, explained in detail below, is

10   comprised of telephone and data networking components

which facilitate identification of a caller and can cause

cellular MSC 7 and telephony network 9 to properly switch

the call to the desired destination.

When a call is received from telephone 4, telephony

15   hardware 6 provides identification data to database 16

and alerts CSR terminal 18 of the incoming call such that

a customer service representative using CSR terminal 18

is presented with the telephone user's contact directory

and other personal information such as their name.

20   User terminals 10 are used to populate and update a

user's personal contact list stored on database 16. User

terminals 10 can be any computing device capable of

accessing a server. Preferably, user terminals 10 are

desktop or laptop personal computers running web browser

5   software, such as MICROSOFT INTERNET EXPLORER or NETSCAPE

COMMUNICATOR, or running PIM software, such as MICROSOFT

OUTLOOK, or a hand-held computing device such as a PDA,

for example, a 3COM PALM PILOT (or any other device

running WINDOWS CE and the like).

10   In the case where user terminal 10 is a desktop or

laptop personal computer, no specialized software or

hardware configuration is required, other than that

necessary to allow user terminal 10 to communication

across a database communication network. For example, as

15   is known in the art, user terminal 10 must have a network

interface and data communication networking protocol

software, such as Transmission Control Protocol/Internet

Protocol (TCP/IP) drivers.

Data communication network 14 is preferably the

20   Internet, but can be any network capable of communicating

contact list data between user terminal 10 and data
communication network hardware 12. As such, data
communication network 14 allows any user with an
appropriate user terminal 10 to create, revise and .

5   synchronize their personal contact list.

Data communication network hardware 12, described in
detail below, is comprised of those elements necessary to
facilitate communications between the various types of
user terminals 10 and database 16 and CSR terminal 18.

10   For example, data communication network hardware 12 is
preferably comprised of a number of processors, each
designed to accept data in various formats such that a
user's personal contact list, as stored in database 16,
can be easily created and/or revised. In other words,

15   data communication network hardware 12 serves in part as
a data filtration, conversion and storage subsystem for
system 2.

Database 16 is preferably any known database system
which can be programmed to support those data required to

20   maintain a personal contact list, and also identify the

user and originating telephone system (company) of
telephone 4. Database 16 preferably supports multiple
database tables for a voluminous quantity of users, each
with potentially hundreds or thousands of records in,
5   their personal contact list. Database 16 also stores
multimedia data associated with each user or an
organization who is sponsoring a group of users.

For example, database 16 can store a branded audio
message associated with a sponsor such as the originating
10   telephone company such that when the user accesses system
2 via telephone 4, the audio welcome message is retrieved
by CSR terminal 18 and played to the user before the
customer service representative picks up the user's
telephone call. The welcome audio message is discussed
15   in detail below.

Database 16 can be based on any known database
software and any known database format, but is preferably
a Microsoft SQL relational database engine. The hardware
configuration of database 16 can be any hardware platform
20   capable of supporting the quantity of users and entries

00424206.2

in their respective contact lists. As such, database 16

can be as small as an Intel-based personal computer or as

large as a mainframe computer.

Those of ordinary skill in the art can appreciate

5   that although database 16 is shown as a single unit, it

is not limited to this configuration. Database 16 can be

comprised of multiple hardware units, i.e., central

processing units and/or storage devices such as CD-ROMs,

hard disk drives, tape disk drives, etc. which can

10   communicate with each other across a transmission link.

As such, it is contemplated that database 16 can take the

form of a distributed database. For example, users who

are primarily based on the west coast can be supported

from a portion of database 16 located in California,

15   while users primarily located on the east coast can

access a portion of database 16 which is located in New

York.

Database 16 is preferably a structured query

language (SQL) database comprised of five different

20   relational database tables. These include a user

database table, personal contact list table for each

user, updated contact list tables, rejected updated

contact list tables and a listing arbitration table.

The user table stores information about each user,

5 such as their name, address, company, telephone carrier,

billing information, and the like.

The personal contact list tables preferably store

contact names and numbers for each corresponding user.

The personal contact list can also be arranged to include

10 more detailed information about each contact, such as

electronic and surface mail addresses, job title, company

name, company address, facsimile telephone number, home

web page address, birthday, and the like. Each entry in

a contact list is assigned a unique identification

15 number.

The updated listings tables store updated listings

contact information which is to be added, deleted or

revised for a user's contact list in system databases

other than the directly updated database. In other

20 words, a user seeking to revise their personal contact

list operates on one list directly. These changes are then incorporated into personal contact list database copies in other system components, for example, a database in data communication network hardware 12, via a

5   database synchronization process.

Changes are preferably verified prior to incorporation into the user's personal contact list. For example, a user attempting to harmonize their hand-held computer database with their personal contact list

10 database initiates a harmonization process, as discussed in detail below. These changes are not incorporated into the user's personal contact list until the user's authenticity has been verified, for example, by ensuring that the user is authorized to perform harmonization

15 operations, and once the requested change has been verified for accuracy, for example, that the requested change is not a duplicate of a previous request and such that the change request will not corrupt the user's personal contact list.

20   Those requested changes which cannot be implemented

00424206.2

are stored in rejected updated listings tables along with a reason for the error, for example, that the user is an invalid user, that the requested change is a duplicate, and the like.

5   The listing arbitration table tracks the listing identification numbers assigned to each entry in a user's personal contact list. The listing arbitration table is used to track the listing identification numbers to ensure that a unique identification number is assigned.

10   This facilitates future updates, deletions, etc., and also ensures that entries can be made from multiple sources, i.e., a web browser, CSR terminal, PDA, etc., without creating duplicate listing identification numbers.

15   CSR terminal 18 can be any device capable of accessing database 16 and communicating with telephony hardware 6 and data communication network hardware 12, but is preferably a personal computer running Microsoft Windows, or a UNIX workstation. Other than the ability

20   to communication across a local and/or wide area network,

there are no specific hardware requirements for CSR terminal 18.

Although it is preferred that a separate CSR telephone can be implemented as part of system 2 and coupled to telephony hardware 6 for communicating with user telephone 4, CSR terminal 18 is not limited to this arrangement. For example, CSR terminal 18 can be arranged to contain an integrated telephone (not shown). In other words, any arrangement which allows a customer service representative to engage in oral communications with the user of telephone 4 is sufficient. In addition, although only a single CSR terminal 18 is shown, system 2 is not limited to this arrangement. It is contemplated that system 2 is comprised of multiple CSR terminals 18 such that more than one customer service representative is available to accommodate the users of system 2. CSR terminals can also be geographically separated into multiple call centers and coupled by appropriate data networking components.

The telephony aspect of the present invention,

including a detailed description of telephony hardware 6,

is described with reference to Fig. 2. Fig. 2 is a

detailed diagram expanding telephony hardware 6 shown in

Fig. 1. As shown in Fig. 2, telephony hardware 6 is

5 comprised of tandem switch 22, automatic call distributor

(ACD) 24 and out-of-band switches 26 communicating across

out-of-band network 28.

Although only one cellular MSC 7, tandem switch 22

and ACD 24 are shown, it should be understood that

10 telephony hardware 6 can be configured to include more

than one of each of these devices. For example, a

plurality of cellular MSCs 7 can be coupled to one

telephony network 9 or telephony networks provided by

different carriers and further coupled to one or more

15 tandem switches 22. Similarly, more than one ACD 24 can

be implemented to distribute calls to a plurality of CSR

terminals 18.

Cellular MSC 7 preferably comprises a mobile

telephone switch used to receive cellular telephone calls

20 from telephones 4. Cellular MSC 7 is preferably located

at a cellular carrier's mobile switching office and

couples the carrier's cellular telephone network to

telephony network 9 which is preferably the public

switched telephone network (PSTN). The types of links

5   coupling cellular MSC 7 to tandem switch 22 and telephony

network 9 are known in the art and include digital T-

carriers, integrated services digital network (ISDN),

asynchronous transfer mode (ATM) and the like.

Cellular MSC 7 is further coupled to tandem switch

10   22 using known digital communication link technology.

Tandem switch 22 is preferably an ORYX switch sold by

PRIORITY CALL, INC. Many functions performed by tandem

switch 22 are known to those of ordinary skill in the art

and include telephone call routing between trunks,

15   converting one signaling type to another, such as between

digital signaling systems, dual tone multi-frequency

(DTMF)signaling, multi-frequency signaling, ISDN, etc.,

and capturing call length and destination data for

billing, etc. Although tandem switch 22 is preferably

20   co-located with cellular MSC 7, these devices can be

geographically separated and interconnected by wide area

network communication links.

Tandem switch 22 is also coupled to out-of-band

switch 26 for communicating out-of-band signaling data to

5   database 16 and CSR terminal 18 using a digital

communication link. A detailed description of the out-

of-band signaling is provided below.

Tandem switch 22 is further coupled to ACD 24,

communicating using known link technology. Automatic

10   call distribution devices are known to those of ordinary

skill in the art. ACD 24 queues incoming calls from

telephones 4 and distributes them to a customer service

representative, preferably via CSR terminal 18 in

accordance with predetermined distribution functions.

15   For example, ACD 24 can be configured to distribute the

oldest pending call to the next available customer

service representative. ACD 24 is preferably configured

to transmit the telephone number of telephone 4 to CSR

terminal 18 so that CSR terminal 18 can search database

20   16 for the user's personal contact list. This enables

the customer service representative to have the user's contact list retrieved from database 16 and loaded on CSR terminal 18's display either before or at approximately the same time that the customer service representative

5   answers the user's call.

Tandem switch 22 uses the out-of-band switches 26 and out-of-band network 28 to provide data to CSR terminal 18 which informs CSR terminal 18 of the particular tandem switch 22 receiving the call from

10   telephone 4. The out-of-band system formed by out-of-band switches 26 and out-of-band network 28 can be any network capable of data communication transmissions, but is preferably a TCP/IP network.

Out-of-band switches 26 and out-of-band network 28

15   are also used by CSR terminal 18 to provide tandem switch 22 with out-of-band signaling call completion data for release link flash transfer. Methods for release link flash transfer are known in the art and refer to the ability of a user to reach a customer service

20   representative and request another number, which is then

dialed by the operator or transferred automatically by

providing a data packet to the tandem switch. In the

case of the present invention, however, this data is

preferably provided via out-of-band switches 26 and out-

5   of-band network 28 based on the originating telephone

carrier. Of course, tandem switch 22 and CSR terminal 18

can be configured to communicate in-band, i.e., using the

same communication lines as the actual audio call data.

Thus, the destination telephone number is provided

10   to tandem switch 22 such that tandem switch 22 can dial

the destination telephone number and then release the

call from the customer service representative and ACD 24.

As an alternative embodiment, tandem switch 22 can be

configured to transfer the call to cellular MSC 7 (or

15   another switch in telephony network 9), thereby releasing

the telephony resources of system 2. In other words,

releasing the link allows the telephone call to be

completed such that telephone 4 communicates with the

destination telephone via telephony network 9 without

20   implicating tandem switch 22.

00424206.2

The operational flow which allows a user of telephone 4 to be connected to a contact number from their personal contact list is explained with reference to Fig. 3. Initially, it should be noted that it is

5 assumed that the user's personal contact list is available and stored in database 16. A detailed description of how a user's personal contact list is updated, i.e., created and revised, is provided below.

It should also be noted that although the operation

10 of the telephony portion of system 2 is described with reference to a caller using a cellular telephone, the invention is not limited to such. It is contemplated that a user using a wire-based (PSTN) telephone as the call originator can also successfully use system 2. In

15 this case, cellular MSC 7 is not used, and instead replaced by a PSTN carrier telephone switch.

A user wishing to be connected with a contact calls the personalized directory assistance service provided by system 2 (step 28). Preferably, the user dials an easy

20 to remember telephone number, such as *4, *44, and the

like. Cellular MSC 7 is configured to recognize that the dial number string belongs to the personal directory assistance service and routes the inbound call to tandem switch 22 (step 30). Prior to routing the call to tandem switch 22, cellular MSC 7 translates the user's dial string (for example, *4) to the telephone number actually associated with the personal directory service, for example, 511.

This translation allows different cellular service carriers to allow access to the service provided by the present invention using different simple user dial strings. For example, cellular telephone carrier A may support access to the personalized directory assistance service by dial string number *4, while cellular carrier B may access the service using user dial string *5. Upon receiving the inbound call, tandem switch 22 further translates the MSC dial string and routes the call to ACD 24. The translation by tandem switch 22 allows system 2 to identify the particular cellular MSC 7 from which the dial string was received along with the actual MSC dial

string so that the elements of system 2 can determine what service is desired, and where the inbound call is originating from.

5 For example, tandem switch 22 might translate MSC dial string 511 to 9605. The string translated by tandem switch 22 is referred to as the direct inward dial (DID) number. Thus, each tandem switch 22 can have multiple DID numbers to identify a user's request for different services and their calling location. It should be noted

10 that the user's telephone ID, i.e., telephone number, is recognized by cellular MSC 7 and transmitted to tandem switch 22, ACD 24 and CSR terminal 18 as an automatic number identification (ANI) data string.

Once a CSR terminal 18 is available to process the

15 user's request, the ACD routes the call to that CSR terminal (step 34) along with the DID and ANI data. It should be noted that, although the preferred embodiment employs ACD 24, system 2 can be arranged without ACD 24. For example, such that tandem switch 24 completes calls

20 to CSR terminal 18 via a private branch exchange hunt

group.   Because CSR terminal 18 is provided with data

detailing the nature of the user's desired service and

where the call originated from (for example, the

originating cellular carrier), CSR terminal 18 preferably

5   retrieves a branded audio file stored in database 16

which is associated with the DID or the user's ANI, and

plays that message for the user while the user is waiting

for the customer service representative.   Preferably, the

branded audio file is recorded using the voice of the

10   customer service representative handling the call.

Although not shown, an alternative embodiment is

contemplated in which ACD 24 or CSR terminal 18 retrieves

the audio file from a processor other than that which

supports database 16.   In other words, this audio

15   processor would be coupled to ACD 24 and/or CSR terminal

and/or one or more of the other telephony hardware

elements.   As an alternative embodiment, ACD 24 retrieves

and plays a generic audio file directly from database 16

or via CSR terminal 18 such that it is CSR terminal 18

20   which conducts the actual database table lookup in

database 16 to retrieve the generic audio file. In this
case, a generic audio file preferably comprises a system
welcome greeting not recorded in the handling CSR's
voice.

5   Preferably, ACD 24 transmits the DID and ANI data to
CSR 18 over a data communications link, such as a TCP/IP
link, which is separate from the link used to transfer
the actual call, i.e., user's voice. At approximately
the same time as the transferred call is being answered
10   by a customer service representative, CSR 18 generates
and submits a database lookup query to database 16 to
retrieve the personal contact list associated with the
caller's telephone ID, for example, the telephone number
of telephone 4 (step 36).

15   If a list associated with the caller's telephone ID
is present in database 16 (step 38), the user's personal
contact list is retrieved and presented on the display of
user terminal 18 (step 40). Where a personal contact
list is not identified, such as the case where the user
20   is calling from a telephone 4 different from that

registered with system 2, the customer service

representative must make an oral request from the user to

determine the telephone ID under which they have

registered (step 42). In this case, it is contemplated

5   that an authentication password will be stored in

database 16 along with the user's personal contact list

such that the personal contact list will only be

retrieved, or the CSR authorized to continue processing

the user's request, when the authentication password

10   stored in database 16 matches that given by the user.

Where the user provides a telephone ID and an

authentication password which are present in database 16

and validated by CSR terminal 18, the user's personal

contact list is retrieved and presented on the display of

15   CSR terminal 18, as described above with respect to step

40.

Of course, the entire contents of a user's personal

contact list need not be actually displayed on CSR

terminal 18. In the alternative, CSR 18 can transfer the

20   CSR list to its internal memory or storage for searching,

or can initiate SQL database lookup queries on database

16. Preferably, the actual personal contact list data is

not transferred to CSR terminal 18, but rather that CSR

18 initiates specific database queries once the customer

5   service representative determines whom the user wishes to

contact.

It is also contemplated that users can be grouped to

access a common personal contact list, such as the case

where a group of users has a common associated interest

10   in the list, for example a company directory. It is

further contemplated that each user within the group can

customize the common personal contact list to his or her

needs by adding entries specific to them. In other

words, a user's personal contact list would be comprised

15   of the common personal contact list plus their own

entries.

Methods for initiating a query and searching a

database are known. The customer service representative

then uses CSR terminal 18 to search the user's personal

20   contact list based on the request, and determines the

telephone number of the desired contact (step 44). The

customer service representative then causes CSR terminal

18 to send call completion data to the tandem switch via

out-of-band switches 26 and out-of-band network 28 (step

5   46).

Recall that CSR terminal 18 was sent the tandem

switch DID as a result of steps 32 and 34. CSR terminal

18 is able to determine the corresponding network address

by looking up the network address, preferably a TCP/IP

10   user datagram protocol (UDP) address from an out-of-band

address table stored in database 16. Finally, tandem

switch 22 drops the call to ACD 24 and transmits the

contact number dial string to cellular MSC 7 to connect

the call to the desired contact number via telephony

15   network 9 (step 48). It should be noted that call

completion is not limited solely to connecting the call

through the originating cellular MSC 7. It is

contemplated that tandem switch 22 can complete the call

via a different PSTN switch coupled to telephony network

20   9. The call dropping process and connection via

telephony network 9 is the release link flash transfer process described above.

An example of an out-of-band address table is described with reference to Fig. 4. Fig. 4 shows an out-of-band address table 50 stored in database 16. Out-of-band address table 50 is used by CSR terminal 18 as described above to determine the destination network address for the tandem switch 22 from which the user's call originated. Out-of-band address 50 is comprised of one or more records 52 in which each record 52 is comprised of a DID number field 54, a sequence field 56, a UDP address field 58, a UDP port field 60 and UDP time-out field 62. These fields, taken together, comprise a record which when a search based on DID number field 54 is initiated by CSR terminal 18, yields the UDP address, UDP port and UDP time-out values needed by CSR terminal 18 to route the desired contact number to tandem switch 22 across out-of-band network 28.

In particular, DID number field 54 represents the DID number translated by tandem switch 22 during the

user's inbound call. Sequence number field 56 represents an identification number which allows multiple UDP addresses to be associated with a single DID number. Unique records for combinations with the same UDP

5   address, port and DID number are created by assigning a unique sequence number to the combination. This is useful for supporting parallel transmissions to the same DID on tandem switch 22 or for sequential transmission upon failure of the previous UDP message. UDP address

10   field 58 corresponds with the destination UDP network address associated with the DID number for tandem switch 22. UDP port field 60 identifies the specific process within tandem switch 22 to which CSR terminal 18 should communicate. UDP time-out field 62 sets forth the time,

15   preferably in milliseconds, for which CSR terminal 18 should wait to receive an acknowledgment from tandem switch 22 that tandem switch 22 has received the contact number. The specific definitions of UDP address field 58, UDP port 60 and UDP time-out value 62 are known in

20   the art.

The data communication network aspect of the present invention, including a detailed description of data communication network hardware 12 is described with reference to Fig. 5. As shown in Fig. 5, data

5 communication network hardware 12 is comprised of firewall 64, PIM server 66, web server 68, hand-held server 70, synchronization server 72 and server database 73. Firewall 64, servers 66-72 and database 73 can be any computer capable of communicating across a network,

10 each preferably comprising a central precessing unit, storage device such as a hard disk drive, CD-ROM, tape drive, digital video disk (DVD) drive, etc., a read-only memory and enough random access memory to support the expected number of users. In other words, firewall 64,

15 servers 66-72 and database 73 can range from a personal computer to a mainframe computer, depending on the demand expected to be met.

Database 73 is arranged in a manner similar to database 16 and supports direct database update requests

20 from user terminals 10. In the preferred embodiment, CSR

00424206.2

terminal 18 directly updates database 16, while servers

66-70 directly update server database 73.

Synchronization server 72 synchronizes server database 73

and database 16.

5   As shown in Fig. 5, firewall 64 is coupled to data

communication network 14. Firewall 64 can be any device

capable of running known firewall, i.e., network

protection, software. In the alternative, firewall 64

can be omitted and servers 66-72 arranged to communicate

10   directly with data communication network 14. Firewall

64, therefore, serves to isolate the elements of data

communication network hardware 12 from unauthorized

intrusion from users of data communication network 14.

Firewall 64 is also coupled to PIM server 66, web

15   server 68 and hand-held server 70, all of which are

coupled to the same network segment. It is contemplated

that any known networking topology and technology can be

used, including Ethernet technologies, token ring

technologies, fiber distributed data interface (FDDI)

20   technologies, switched networking technologies,

asynchronous transfer mode (ATM) technologies, and the like. Firewall 64 is preferably configured to allow limited access to servers 66, 68 and 70 from data communication network 14, and to allow less limited

5   communication between servers 66, 68 and 70 with synchronization server 72.

Synchronization server 72 is coupled to firewall 64 via a network interface separate from those of servers 66, 68 and 70, and is coupled on the same side of the

10   firewall as database 16 and CSR terminal 18. One of ordinary skill in the art will recognize that synchronization server 72, database 16 and CSR terminal 18 are not necessarily resident on the same physical network segment, but rather can be separated by

15   networking components, such as local area network switches, routers, hubs, etc.

The data communication aspect of the present invention allows a user's personal contact list to be updated (created and edited), and synchronized with other

20   user contact lists. This is preferably accomplished in

one of six ways. First, the user can call the customer

service representative using the service access (*4) or

another predetermined telephone number such that the

customer service representative can make the desired

5   changes to the user's personal contact list on database

16 using CSR terminal 18. Second, user terminals 10 can

access web server 68 using a web browser to maintain

(create and edit) their personal contact list. Third,

where user terminal 10 comprises PIM contact management

10   software, user terminal 10 can download and/or

synchronize the contact data in user terminal 10 with

their personal contact list via PIM server 66. Fourth,

where user terminal 10 is a hand-held computer, the hand-

held computer can be "hot synched" with the user's

15   personal contact database by communicating with hand-held

server 70. Fifth, the user can send an electronic mail

from user terminal 10 to web server 68 describing their

desired changes in detail. Sixth, the user can fax their

request to the provider of system 2. Although six

20   techniques have been described, the invention is not

limited to only these techniques.

It should be noted that in each of the above cases, the user's request does not always directly update database 16. For example, where user terminal 10 is a PC

5   or hand-held computer, user terminal 10 communicates with one of servers 66, 68 and 70, such that personal contact updating is done first on server database 73. In these cases, user terminal 10 transmits personal contact list update data to one of servers 66, 68 and 70 in which the

10   update data comprises data corresponding to the user's desired update action. The update is communicated to server database 73 and an updated listings table is created to reflect the changes. Continuously or at periodic intervals, preferably, one hour intervals,

15   synchronization server 72 bidirectionally synchronizes the personal contact list changes requested and stored in server database 73 with database 16 using the updated listings table. This reduces the load of editing and changing personal contact list data in a single database

20   and increases the overall security of the system by

reducing the number of different devices which are permitted to access database 16. Customer service representative initiated changes, made via CSR terminal 18, however, can either communicate directly with database 16 to make the changes or via server database 73 and synchronization server 72.

As part of the synchronization server process, synchronization server 72 searches for requested changes made via servers 66, 68 and 70, by querying the updated listings tables resident on database 73 in which this data table is comprised of update records corresponding to the personal contact list update data sent by user terminal 10 to one of servers 66, 68 and 70. Synchronization server 72 performs the requested action, for example, contact insertion, deletion, clearing, telephone ID changes, etc., on database 16. Those requested changes which are rejected are stored in the rejected updated contact listings table. Updated listings are stored in the updated contact listings table and also incorporated into the user's contact information

list database table. A similar set of steps are used to synchronize updates made to database 16 with server database 73.

Where necessary, synchronization server 72 can be

5 comprised of more than one physical server, such as where appropriate for backup or geographic distribution, and each synchronization server 72 can communicate with more than one database 16 or server database 73, such as the case where database 16 or database 73 is distributed

10 among multiple physical hardware devices.

In addition, it is contemplated that the present invention can be implemented without synchronization server 72 such that CSR terminal 18 and servers 66-70 directly update a single database, such as database 16,

15 or multiple databases, such as database 16 and server database 73.

It is preferred that access to hand-held server 70 and PIM server 66 be restricted until the user has established a valid account by registering for the

20 service with a customer service representative or via web

00424206.2

server 68. In other words, a user attempting to hot synch their hand-held computer or harmonize their PIM database with database 16 will not be permitted to do so unless they have established a valid account. Account

5 verification can be checked, for example, by PIM server 66 or hand-held server 70 prior to accepting the harmonization request from user terminal 10.

It is also contemplated that personal contact list data stored in server database 73 can be used as the

10 basis for harmonizing with PIM contact management software or a hand-held computer in a bidirectional manner, i.e., database harmonization can be accomplished from server database 73 to user terminal 10 via servers 66 or 70, or from user terminal 10 to server database 73

15 via servers 66 or 70.

The interaction between user terminal 10 and web server 68 is described with reference to the flow chart in Fig. 6. A user establishes a session with web server 68 from user terminal 10 (step 74). Session

20 establishment with web server 68 and subsequent display

00424206.2

screens can be accomplished using any known technique, preferably using the hypertext transfer protocol (HTTP). Web server 68 serves as the web site hosting mechanism for system 2. Web server 68 preferably supports web page

5   transfer using pages developed with hypertext mark language (HTML), common gateway interface-bin (CGI-bin) and the like.

Upon session establishment, the user is presented with the service's home page and can select to enter the

10   system as a new user or log in as an exisitng user (step 76).

When the user has not yet registered, such as when the user is new, web server 68 executes the registration process (step 78). The registration process includes the

15   creation of a database record for future synchronization with database 16 comprising the user's account information. A registration information request is transmitted to user terminal 10, preferably as an electronic form to be completed by the user via the web

20   browser software. The user then selects from a list of

operations by navigating through the web site (step 80).

Web server 68 then processes the selected operation (step

82). These operations and processes are described in

detail below. Steps 80 and 82 are continued until the

5   user has completed their desired personal contact list

updating operation (step 84). Fig. 7 shows an example of

an account information registration screen 86.

Registration screen 86 is preferably comprised of a

number of data element descriptions and corresponding

10   locations from which data can be entered using any known

method for entering data on an electronic form, including

using the keyboard, pull-down bars, radio buttons, etc.

Registration screen 86 is comprised of first name

element 88 and corresponding first name element entry

15   area 90, middle name element 92 and corresponding middle

name element entry area 94, last name element 96 and

corresponding last name element entry area 98, mobile

phone number element 100 and corresponding mobile phone

number element entry area 102, mailing address element

20   104 and corresponding mailing address element entry area

106, city element 108 and corresponding city element

entry area 110, state element 112 and corresponding state

element entry area 114, zip code element 116 and

corresponding zip code element entry area 118, electronic

5   mail address element 120 and corresponding electronic

mail address element entry area 122, contact phone number

element 124 and corresponding contact phone number

element area 126, fax number element 128 and

corresponding fax number element entry area 130, password

10   element 132 and corresponding password element entry area

134, password verification element 136 and corresponding

password verification element entry area 138, social

security number element 140 and corresponding social

security number element entry area 142 and registration

15   button 144.

Not all of these elements are necessarily required

in order to establish an account. Preferably, an account

can be established for a user who provides at least last

name element 96, mobile phone number element 100,

20   electronic mail address element 120, contact phone number

124 and password element 132. It is also contemplated that additional data elements can be gathered from a user including credit card data for billing and electronic commerce services, bank account data for bill paying, services, user preferences and demographic data for targeted advertising, electronic commerce, etc.

Billing for the service provided by system 2 can be based on debiting prefunded account balances tracked by database 16, charging the billing account separately for each transaction or periodically charging a flat fee for a large or unlimited amount of service use.

In particular, password verification element 136 is used to ensure that the password entered in password element entry area 134 is the password intended by the user. Social security number element 140 is used as an alternate means of identifying the user in the event that the user has forgotten their password. Of course, any combination of elements in registration screen 86 can be implemented.

Upon completing the required entry areas on

registration screen 86, the user selects registration

button 144, thereby causing user terminal 10 to transmit

the registration data corresponding to the entered data

to web server 68. Web server 68 verifies that the ,

5   entered data is valid, for example, that the password

element 132 and verified password element 136 match, and

that the account is not a duplicate of that previously

established. Referring again to Fig. 6, when the user is

not new and has successfully been authenticated, or has

10   just registered, user terminal 6 presents a list of

operational options from which the user selects (step

80).

Part of a preferred list of options from which a

user may select is shown in Fig. 8. The remaining

15   options, contact editing and contact deletion, are

discussed below. Fig. 8 is an example of a screen

display presented in a browser window on user terminal 10

showing contact summary screen 146. Contact summary

screen 146 preferably allows a user to add contact by

20   selecting add contact link 148, edit account information

by selected edit account information link 150, return to
the home page by selecting return to log-in screen link
152 or generate an electronic mail to the administrator
of web server 68 by selecting electronic mail   ,
5   administrator link 154.

Contact summary screen 146 also allows a user to
search for an entry in their personal contact list by
entering the search parameters in search entry area 156
and selecting search button 158. Selecting all listings
10   button 160 causes the user's entire personal contact list
to be retrieved from database 16 and presented on the
display of user terminal 10. Selecting a letter from
alphabetic character list 162 causes all entries in the
contact list corresponding to the selected letter to be
15   displayed on user terminal 10. Corresponding entries can
be based on either the first initial of the contact's
first name and/or the first character of the contact's
last name.

Information area 164 is comprised of entries
20   corresponding to the selection made from alphabetic

00424206.2

character list 162, or the status of the user's

selection, for example, that a contact has been added

and/or other relevant information which is communicated

to the user.

5   As shown in Fig. 8, information area 164 indicates

that there are no entries in the user's contact list. It

should be noted that in the case where entries in the

user's personal contact list were made previously, a user

who successfully logs into web server 68 is presented

10   with contact summary screen 146 arranged such that the

entries are displayed in information area 164. Known

scrolling or screen display methods can be used to

display portions of the user's personal contact list

where the number of entries is larger than that which can

15   be displayed at one time.

Although not shown, summary screen 146 can include

other links such as software download links, links to

other services, such as chat rooms, etc.

Selecting add contact link 148 indicates to web

20   server 68 that the user wishes to add one or more

contacts. Fig. 9 shows an example of add contact screen

166, displayed when add contact link 148 is selected.

Add contact screen 166 comprises a contact name element

168 and corresponding contact name element entry area

5   170, contact number element 172 and corresponding contact

number element entry area 174. As shown in Fig. 9, the

user has, for example, entered "William Smith" in contact

name element entry area 170 with a corresponding

telephone number of "(123) 456-7890" in telephone number

10   element entry area 174. The user selects save button 176

if satisfied with the entry, or can cancel the entire

operation by selecting cancel button 178. Selecting

cancel button 178 preferably causes contact summary

screen 146 to be displayed on user terminal 10.

15   The user can enter a group of contacts by entering

one or more contact names and numbers, preferably using a

comma delimited format so that web server 68 can parse

the entries in input area 180. Of course, any method for

distinguishing between personal contact list entries can

20   be used in input area 180. Add contact screen 166 also

includes import button 182 which, when selected, allows a group of personal contact entries to be transferred from user terminal 10 to web server 68. Methods for transferring files between a computer and a web server are known.

Although not shown, as discussed above, add contact screen 166, and all other screens which display contact data, can be arranged to allow for the capture and display of more detailed contact data.

As discussed above, selecting save button 176 causes user terminal 10 to transmit the contact entry or entries to be transmitted to web server 68. Fig. 10 shows an example of contact summary screen 146 displayed on user terminal 10 after save button 176 has been selected. In particular, information area 164 shows that "William Smith" has been added along with the corresponding telephone number.

As shown in Fig. 10, information area 164 also includes edit link 184 and delete link 186. When selected by a user, edit link 184 causes user terminal 10

to display a screen similar to that of Fig. 9, thereby

allowing the user to edit the corresponding contact

entry.

Selecting delete link 186 indicates to web server 68

5   that the user wishes to delete the corresponding entry.

Fig. 11 shows an example of contact deletion

confirmation screen 188, displayed when the user selects

delete contact link 186. As shown in Fig. 11, contact

deletion confirmation screen 188 preferably comprises

10   contact area 190, delete button 192 and cancel button

194. Contact area 190 preferably contains the contact

name and number corresponding to the contact displayed in

information area 164 from which the user selected delete

contact link 186. To confirm the deletion, the user

15   selects delete button 192. This selection causes user

terminal 10 to indicate to web server 68 that the user

wishes to delete the corresponding contact name entry

from the user's personal contact list. Selecting cancel

button 194 indicates to web server 68 that the user

20   wishes to cancel the deletion operation. In this case,

web server 68 preferably causes user terminal 10 to
display contact summary screen 146.

Fig. 12 shows an example of contact summary screen
146 displayed when the user confirms deletion by

5   selecting delete button 192 on contact deletion
confirmation screen 188. In particular, information area
164 indicates that the contact, "William Smith" in this
example, has been deleted.

As discussed above, changes made to the user's

10   personal contact list, such as by adding a contact via
add contact screen 166, deleting a contact via contact
deletion confirmation screen 188 or editing a contact by
selecting edit contact link 184 causes a corresponding
record in server database 73 to be created as an update

15   record. This update record is synchronized by
synchronization server 72 with database 16 at the
predetermined periodic synchronization intervals.

When a user with an existing account establishes a
session with web server 68, the user's personal contact

20   list is retrieved from server database 73 by web server

00424206.2

68 and transferred to user terminal 10 as part of the

data comprising contact summary screen 146. An example

of contact summary screen 146 displayed when an existing

user establishes a session with web server 68 is shown in

5   Fig. 13. In particular, information area 164 shows the

user's personal contact list, along with provisions to

edit the contact by selecting edit contact link 184 or

deleting the corresponding contact by selecting delete

contact link 186.

10   As such, the user can navigate through the various

display screens presented by web server 68 by selecting

particular list operation options (step 80). Depending

on the selected operation, web server 68 processes the

selected operation, for example, contact addition,

15   editing and deletion (step 82). The user can navigate

through the web site provided by web server 68 making

changes as necessary (step 84). The changing process

continues until the user logs off by leaving the web site

or by logging off from web server 68, preferably by

20   selecting a log-off button or link (not shown).

Software to harmonize hand-held computer and other hand-held computing device databases with larger computers, such as personal computers, is generally known. Typically, however, this software requires that the hand-held computer and larger computing device be present in the same room such that they can be physically connected with a cable or in line of sight for infrared communication. The present invention allows harmonization between a hand-held computer (as user terminal 10) and hand-held server 70 via data communication network 14. In particular, user terminal 10 is equipped with software which allows user terminal 10 to initiate a communication session with hand-held server 70. This session preferably includes an authentication mechanism such as a user ID and password to ensure that the user is authorized to use system 2, and in particular, authorized to harmonize databases with server database 73 via hand-held server 70.

Once the communication session has been established, the hand-held computer sends personal contact list

coordination data to hand-held server 70, including

additions, deletions and changes to be made to the user's

personal contact list. Preferably, hand-held server 70

transfers this data to server database 73 for subsequent

5 synchronization with database 16 via synchronization

server 72. In an alternative embodiment, personal

contact list changes made via hand-held server 70 can be

directly harmonized with database 16.

A similar arrangement is made with respect to PIM

10 server 66 where user terminal 10 is a PC utilizing PIM

contact management software. Software for synchronizing

a PIM with a server such as PIM server 66 is known. For

example, software provided by Paragon Software Limited is

installed on user terminal 10 and transmitted to PIM

15 server 66 via data communication network 14. In the

preferred embodiment, PIM server 66 preferably transmits

the personal contact list coordination data to server

database 73. This data is then synchronized with

database 16 via synchronization server 72. In the

20 alternative, it is contemplated that PIM server 66 can

directly update database 16.

Changes to a user's personal contact list made via CSR terminal 18 can be made using a web browser loaded on CSR terminal 18, or preferably by a graphical user interface application program which requires less navigation than the above-described browser-based method. The graphical user interface application program can be a MICROSOFT WINDOWS application program which allows a customer service representative to quickly register a new user and update the user's personal contact database in database 16 by adding, deleting and editing database entries. The update information is either synchronized with server database 73 by synchronization server 72 or transmitted directly to the updated listings table in server database 73 as contact list revision data.

It should be noted that although the present invention has been described in detail in terms of a personalized directory assistance system which enables the automatic completion of the user's call, the present invention is not limited to such.

00424206.2

As an alternative embodiment, it is contemplated
that the present system can be used to perform operations
requested by a user, such as for electronic commerce
applications. For example, a user can establish a

5   purchasing profile including their credit card number and
can populate their personal contact list in database 16
(and server database 73) with electronic commerce
information using any of the aforementioned techniques.
The user can use telephone 4 to contact a customer

10   service representative to inquire about personal
information they have stored in database 16, or other
information made available by the provider of system 2
and stored in database 16. It is contemplated that the
user can store data relating to their favorite

15   restaurants and favorite stores.

For example, the user can store his or her clothing
sizes in database 16 and use system 2 to contact a
customer service representative to arrange for purchase
of a pair of pants. The customer service representative

20   has access to a number of vendors whose relevant data is

stored in database 16, for example, telephone number, store location, price, Internet web page uniform resource location (URL), etc. and can promptly order the pants in the correct size.

5   In addition, because the present invention contemplates storing contact addresses, and other data regarding the contact, a user can use telephone 4 to contact a customer server representative to order goods and/or services for delivery directly to the contact.

10   Although the user can store personal information about themselves and their contacts in database 16 for electronic commerce purposes, this information is not always required. For example, the customer service representative can be provided with Internet access via

15   CSR terminal 18 and can search the Internet to fulfill the request. It is also contemplated that a user can contact a customer service representative in order to buy tickets to events for delivery to the user, or to a contact. Similarly, a user can contact a customer

20   service representative via system 2 and request the best

00424206.2

price for an item they wish to buy, even if the best
price is not taken from the retailers in the user's
personal contact list. In this case, the customer
service representative uses CSR terminal 18 to search the
5   Internet using known search techniques to determine the
best available price for the item. The user can then
purchase the item directly at the store, or through the
provider of system 2.

It is also contemplated that the present invention
10   can be used to implement a bill paying service. In
particular, a user will establish a payment profile in
database 16 (and server database 73) including bank
account information, security codes, and names, addresses
and account numbers of payees. When the bill arrives
15   from an authorized payee, the user preferably reviews the
bill for accuracy, then contacts a customer service
representative using system 2 to authorize payment.
Techniques for the actual remittance of bill payments are
known and can be used by the provider of system 2 to pay
20   the bill from the user's authorized bank account.

It is also contemplated that the user contact

database can be used to store data relating to special

occasions, such as birthdays, anniversaries and the like.

When the date of the special occasion nears, an alert is

5   displayed on CSR terminal 18 so that a customer service

representative can contact the user to remind the user of

the special occasion. The customer service

representative can offer to send gifts, flowers, greeting

cards, etc. to the contact, and can use any of the above-

10   described techniques for fulfilling the user's request.

It is also contemplated that a user can access

system 2 to request that a customer service

representative set up conference calls, send electronic

mails, faxes, initiate a page or short message service

15   (SMS) message, request directions which can be sent to

the user via, for example, electronic mail, fax or an SMS

message. Also, a user can contact the customer service

representative via system 2 to locate a restaurant,

request restaurant reviews and information, and even

20   request that the customer service representative make a

reservation for them.

In sum, the present invention provides a human portal which provides access to information and services via a human operator, while leveraging the ubiquity and access capabilities of a wireless telephone.

The present invention advantageously provides a system which allows the user of a telephone, in particular, a mobile telephone, to easily complete a call to a destination, even when they do not know the number, and without the need to fumble with the keypad of their telephone to attempt to recall the telephone number from the memory of telephone 4. The present invention also obviates the need of a user to start PIM software on their laptop or fumble with their hand-held computer to retrieve the contact's telephone number. By allowing a connection with a customer service representative who has access to the user's personal contact list via a simple dial string, the user can easily and safely be connected to their destination.

The present invention further advantageously

00424206.2

provides for a plurality of techniques to create and

update their personal contact list. The present

invention provides for the synchronization of user's

databases with a database in system 2 (database 16),

5   thereby further simplifying the process of maintaining

multiple contact lists in forms suitable for the

different technologies and needs of the user.

The present invention also advantageously allows a

user to easily engage in electronic commerce, without

10   special hardware at the user's location and regardless of

the user's ability to access a computer network such as

the Internet. The user can easily request and receive

services and information, preferably based on a prestored

profile.

15   Although the present invention has been described in

relation to particular embodiments thereof, many other

variations and modifications and other uses will become

apparent to those skilled in the art. It is preferred,

therefore, that the present invention be limited not by

20   the specific disclosure herein, but only by the appended